sentation of that familiar animal. On the other hand, the numerous woodcuts, giving details of cranial and dental characters, leave nothing to be desired, either in accuracy or artistic finish, and the book is, taken altogether, one which should be found in every complete zoological library.

PRIMITIÆ FL. SHAN.

On a Collection of Plants from Upper Burma and the Shan States. By Brigadier-General H. Collett, C.B., F.L.S., and W. Botting Hemsley, F.R.S., A.L.S. In Journal of the Linnean Society, vol. xxviii. (November 5, 1890). Pp. 1–150, tt. 1–22, with a Map.

UPPER BURMA is an arid plain, with an annual rainfall of about 30 inches, containing some isolated mountains. On the east of it are the Shan States, consisting of plateaus, mostly 3000–4000 feet above the sea, traversed by ranges of mountains, attaining 6000–7000 feet, running north and south, and having an annual rainfall estimated at 60 inches. The Shans occupy a large area of this hill country having Siam on the south, Tonquin on the east, and Yunnan on the north and north-east; they are a tribe of the great people denominated (generically) Kookies by Colonel MacCulloch, who extend (in the hills almost universally) from the bend of the Brahmapootra (at the west extremity of Assam) to the mountains north of Canton; the Kalangs in Java and the Mundas of Chota Nagpore may be outlying remnants of this people. The Shan States (or rather the south-west portion of them, for the political boundary of China is hereabout uncertain) had been more or less dependent on Burma. After the annexation of Upper Burma by the English, the Shans had to be got in; and, as is nearly always the case with imperfectly civilized peoples, it was found a necessary preliminary to the establishment of a beneficent despotism that a few should be shot. This duty, in 1887–88, fell to the lot of General H. Collett. No officer could have been selected who would have performed it more mercifully; he is a botanist. In the Shan States during this anxious service, and in the adjacent plain of Upper Burma (including the isolated Mount Popah, alt. 5000 feet), General Collett collected the 725 species of Phanerogams which form the *materies* of the paper we have under notice. Of these 87 are new to science, and several others were very imperfectly known previously. The richness of this collection is due to the fact that General Collett is not a mere collector, who gathers up everything in a new country that comes to his hand, and then sends it to Kew to be matched and named; but a botanist who could (in this remote ground almost cut off from books) determine the genus of most of the plants he lighted on *in the field.* But having to proceed to India to command the province of Assam, General Collett was obliged to leave the description of his collections largely to Mr. Hemsley.

The climate of the plain of Upper Burma is very much drier than that of Bengal and Assam; and the flora, only imperfectly known from the collections of Wallich and of Griffith, contains some plants of the north-west, central provinces, and south of India not known to inhabit the intermediate wet area of East Bengal, Assam, Chittagong, &c. Mr. Hemsley estimates that 25 species out of the 725 collected by General Collett are of this class; but this is perhaps rather an over-estimate, for out of the four *species* he names as absent in the connecting intermediate region, two, viz. *Priva leptostachya* and *Anisopappus Chinensis* are in quantity in the Khasi and Naga Hills (in Assam). But the fact, of a connection between the flora of the Upper Burma plain and that of the drier region of India, whether north-west, central, or south, is as Mr. Hemsley states it.

The flora of the Shan Hills is much richer, more interesting, and novel than that of the Upper Burmese plain. The country lies in a botanic *regio incognita* between the (more or less) known floras of Assam, Burma, and Tonquin (with Yunnan). The plateaus at 3000–5000 feet elevation are often bare; and, as is clear from General Collett's description, exceedingly like the open bare Khasi plateau (depicted by Sir J. D. Hooker in his "Himalayan Journal," vol. ii.). The flora is also very closely allied. It is difficult, without abstracting the entire list of new species, to give a worthy notion of them; but the most interesting having been selected for figuring, we give here the list of plates of the *new* plants:—

2. *Capparis Burmanica*, Coll. et Hemsl.
3. *Hypericum pachyphyllum*, Coll. et Hemsl.
4. *Impatiens ecalcarata*, Coll. et Hemsl.
5. *Crotalaria perpusilla*, Coll. et Hemsl.
6. *Neocollettia gracilis*, Hemsl.
7. *Phylacium majus*, Coll. et Hemsl.
8. *Bauhinia tortuosa*, Coll. et Hemsl.
9. *Rosa gigantea*, Coll.
11. *Lonicera Hildebrandiana*, Coll. et Hemsl.
12. *Inula crassifolia*, Coll. et Hemsl.
13. *Ceropegia nana*, Coll. et Hemsl.
14. *Brachystelma edulis*, Coll. et Hemsl.
16. *Strobilanthes connatus*, Coll. et Hemsl.
17. *Phacellaria caulescens*, Coll. et Hemsl.
18. *Sauropus concinnus*, Coll. et Hemsl.
19. *Bulbophyllum comosum*, Coll. et Hemsl.
20. *Cirrhopetalum Collettianum*, Hemsl.
21. *Polygonatum Kingianum*, Coll. et Hemsl.
22. *Lilium Bakerianum*, Coll. et Hemsl.

Of these *Rosa gigantea* is the largest wild rose (flowers 4 inches diameter) yet found; *Lonicera Hildebrandiana* is the largest honeysuckle (flowers 6½ inches long) yet found; the two orchids are extraordinary species, though located in old genera. *Neocollettia* (Hemsley, *genus novum*) is a 1-ovulate plant placed by Mr. Hemsley next *Phylacium*, but is probably as Mr. Hemsley suggests) one of the tribe *Phaseoleæ* (near *Rhynchosia*).

This collection enables us to estimate the wealth of the newly annexed territory; General Collett has added some observations on agriculture and economic botany. The Khasi pine is plentiful, and (as in several of the adjacent regions) valuable oaks are plentiful, 9 species having been collected by Collett. The area altogether included in General Collett's paper extends from 19° 30′ to 21° 30′ lat., and from 95° to 97° 30′ East long.; and contains probably not less than 4000 species of which Collett's collection gives us 725. Mr. Hemsley, in his part of the introduction, observes that the species are to the genera as 725 to 460, *i.e.* about as 1·6 to 1, and that these proportions closely approach those obtaining in many insular floras. But similar proportions usually occur when any area is imperfectly collected over. Thus in the

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very similar list of Muneypoor and Naga Hill plants (given in Journ. Linn. Soc., vol. xxv.) there are 924 Phænogams in 503 genera—*i.e.* a proportion of about 1·8 species to a genus. In this case the total flora would amount perhaps to 5000 species.

Mr. Hemsley concludes:—"The most interesting point, perhaps, connected with this collection has been left to the last. It is the large number of temperate types it contains from comparatively low elevations. Sir Joseph Hooker ("Himalayan Journ.," vol. ii. [ed. i.] p. 281) observed the same thing in the investigation of the Khasi Hills." This is a very curious point. Mr. Hemsley suggests that in the Shan Hills the comparatively small rainfall may have had much to do with it. But, near Cherra Poonjee, where Sir Joseph Hooker observed the fact, the annual rainfall varies from 400 to 650 inches. In both the Khasi and the Shan Hills the plateaus were probably once largely covered by jungle which has been (except patches) destroyed, while the district is kept in open grass (or small shrubs) by setting the grass on fire at the commencement of each cold season. In this way a large number of the temperate genera cited by Mr. Hemsley (Anemone, Delphinium, Silene, Stellaria, Hypericum, &c.) obtain a suitable habitat, which is denied them in the dense forest of the Eastern Himalaya at the same elevation (4000-7000 feet). But this is no adequate explanation. *Pinus longifolia*, which ascends to 7500 feet in the North-Western Himalaya, is rare above 3000 feet in Sikkim, and grows very fairly in the Bengal plain at Dacca. The Khasi pine, which grows mainly in the Khasi Hills at about 5000 feet altitude, descends nearly to sea-level in more tropical areas. And there are many such cases. The paper is put through the press by Mr. Hemsley with his usual literary finish. He might be asked why he prints *Physostelma carnosa* and *Brachystelma edulis*. He might reply that, according to "Propria quæ maribus," the names of all plants are female. Granting that, then why does Mr. Hemsley, who insists on uniformity from other botanic writers, write *Hypericum pachyphyllum?*

The present paper is produced by General Collett and the Linnean Society at their own private costs and charges. It would be a mistake to infer, therefore, that it is inferior in botanic merit to Aitchison's "Botany of the Afghan Delimitation Commission" or to Ridley's "Botany of Fernando Noronha"; and it has the additional value to Government that it deals with a territory (before unexplored) on its annexation to the English Crown. The thanks of all systematic, geographic, and economic botanists will be gratefully accorded to General Collett for his very valuable contribution to knowledge.

THE METHOD OF POLITICAL ECONOMY.

The Scope and Method of Political Economy. By John Neville Keynes, M.A. (London: Macmillan and Co., 1891.)

MR. KEYNES is known to the philosophical world as the author of what is in some respects the best treatise on a subject which has occupied the acutest intellects for above two thousand years—to wit, formal logic. Cultivated by so many skilful hands, that little branch of science might seem to have produced all the fruit of which it was capable. Yet it has been at least trimmed and pruned by Mr. Keynes not inelegantly. Nay, more; climbing up to that part where growth is still going on, he has gathered new fruits, or at least brought down to earth those which had been before very difficult of attainment. We allude to the arduous and thorny problems of symbolic logic, which Mr. Keynes, in the work referred to, has translated into the language of ordinary life and common-sense.

Mr. Keynes's second claim to distinction is curiously similar to his first. His present subject has not, indeed, the venerable antiquity of formal logic. Yet the material logic of political economy has also occupied treatises which are already classical. Mill, the Aristotle of the subject, opened and almost exhausted it.

> "Quo nihil majus generatur ipso,
> Nec viget quidquam simile aut secundum;"

even if we concede to Mr. Keynes that Mill required to be corrected by himself: that the "Unsettled Questions" lag behind the "Political Economy." The general principles propounded by Mill appear to have been accepted by an influential majority of his successors; not excepting many names which are usually associated with the exclusively historical school. The remarks of Cohn, Roscher, and Wagner, which Mr. Keynes cites, are substantially in accord with Mill's. We say, substantially; for the phrase and emphasis have varied with the individuality of each writer, and the particular variety of heresy which he has had occasion to controvert.

Reviewing a long controversy, Mr. Keynes draws up, as it were, a confession of faith, so comprehensive and tolerant that, as it seems to us, only fanatics can find difficulty in subscribing to it.

The cardinal article is, of course, that which defines the relation between abstract reasoning and specific experience. Mr. Keynes holds the balance impartially between the *a priorists* and the historical school. He reasserts in modern words Mill's doctrine that "either acquirement without the other leaves one lame and impotent." In Prof. Cohn's words, cited by Mr. Keynes, "all induction is blind, so long as the deduction of causal connections is left out of account; and all deduction is barren, so long as it does not start from observation."

On the one hand, Mr. Keynes insists that all deductive reasoning rests on "hypotheses"; which do not indeed rest upon nothing, yet are seldom sufficient to support a practical conclusion. The person who confines himself to abstract reasoning must be content, as Mill says, to "have no opinion, or to hold it with extreme modesty, on the applications which should be made of his doctrines to existing circumstances." Mr. Keynes has no leaning towards the dogmatists who deduce *laisser faire* or any other practical rule from abstract notions. He deals another blow to, he speeds upon their road to extinction, those whom Dr. Sidgwick has described as "a scanty and dwindling handful of doctrinaires whom the progress of economic science has left stranded on the crude generalizations of an earlier period."

On the other hand, Mr. Keynes does not exaggerate the importance of experience and observation. He points out the uses of history in illustrating, criticizing

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